Pesticides in rivers and streams of the United States: Summary of results from the first 10 years of the U.S. Geological Survey National Water-Quality Assessment Program

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The U.S. Geological Survey National Water-Quality Assessment Program (NAWQA) has been assessing water quality in 51 major river basins and aquifer systems since 1992. Assessment of the occurrence and distribution of pesticides was a main objective of the first 10 years of data collection. Analytical data for 87 pesticides in 3,380 filtered water samples from 186 rivers and streams show that pesticides are detected frequently in surface water. One or more of the 87 pesticides analyzed for were detected in more than 95 percent of samples from agricultural and urban areas and in nearly 65 percent of samples from undeveloped areas. More than one pesticide was measured in most water samples. The median number of pesticides detected in water samples was three in undeveloped areas, seven in urban areas, and eight in agricultural areas. Water-quality criteria for the protection of aquatic life have been established for 33 pesticides measured by the NAWQA Program. One or more of the 33 pesticides exceeded aquatic-life criteria in less than 3 percent of samples from undeveloped areas, more than 10 percent of samples from agricultural areas, and nearly 25 percent of samples from urban areas. Insecticides were detected much more frequently and at higher concentrations in urban areas than in agricultural areas and were responsible for most of the exceedances of aquatic-life criteria at urban sites.